Detailed Office Action

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/21/2009 has been entered.

Claims 1-21 have been canceled. Claims 22 and 31 have been amended. Claims 40-43 are new. Claims 22-43 are currently pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 31, 35, 37, 38, and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 92/03613 HENRICSON.

HENRICSON discloses an apparatus for pumping and degassing pulp [abstract]. HENRICSON discloses pump 16 which can be an MC pump [pg. 6 lines 30-36] pumps to screening (14) at 1% consistency [pg. 8 line 1]. Prior to screening between the MC pump and the screen (14) the pulp is diluted twice at pumps (17) and (18) [see Figure 2 below edited by examiner]. The pumps are rotating pieces of equipment which can also act as

rotary mixers. As this is an apparatus claim, the MC pump of HENRICSON would be capable of pumping at a medium consistency of 10-15%.

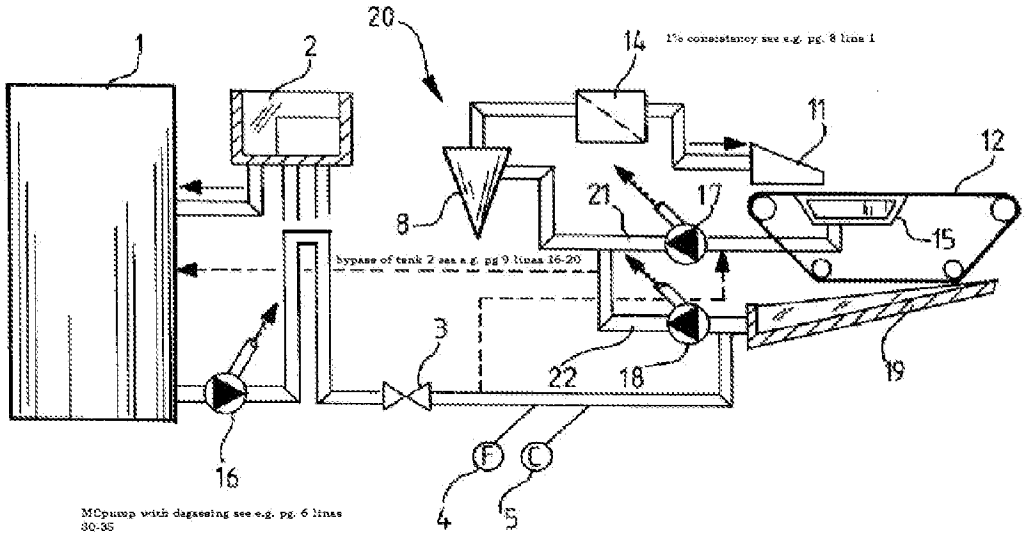

FIG. 2

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 22, 27-29, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 92/03613 HENRICSON.

HENRICSON discloses pumping at up to about 5% consistency using a degassing pump which can be an MC pump [pg. 6 lines 30-36] where the pulp is diluted in two stages to 1% consistency prior to screening [Figure 2].

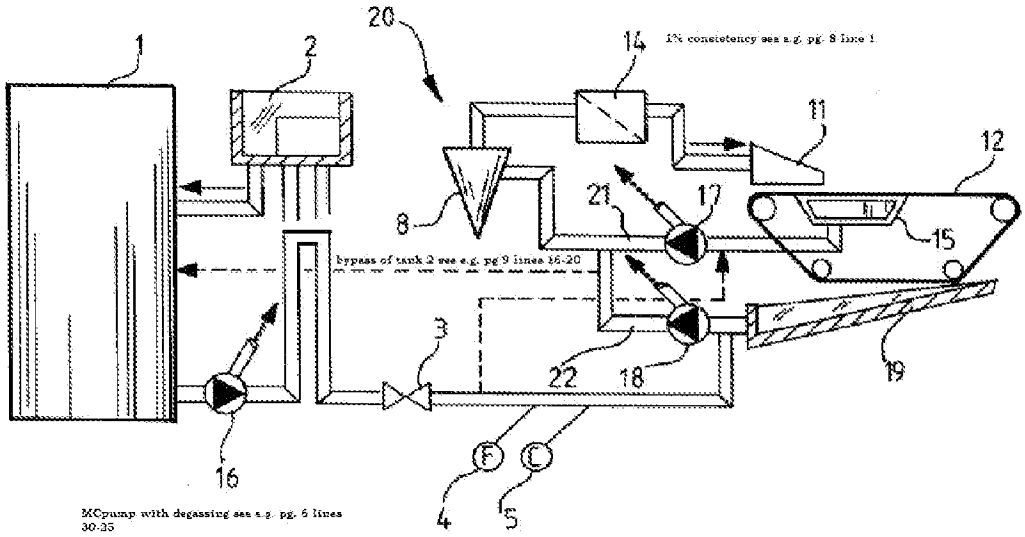

FIG. 2

While HENRICSON teaches an MC pump it does not teach 8-15% consistency pulp which is medium consistency. At the time of the invention it would have been obvious to use the medium consistency pump of HENRICSON to pump a medium consistency pulp to the screen stage by adjusting the consistency prior to screening. The

person of ordinary skill in the art would expect that the MC pump would be capable of pumping medium consistency pulp as this is what an MC pump was designed for. Further the amount of dilution required would not be a significant increase over the prior art.

5% consistency (19:1 liquor to pulp ratio) → 1% consistency (99:1 liquor to wood ratio) thus the dilution that occurs in the method of HENRICSON is 80 tons water dilution per ton of pulp.

To go from 10% consistency (10:1) to 1 % consistency (99:1) = 89 tons water per ton pulp dilution required. Therefore dilution from 10% consistency pulp to 1% consistency pulp only would require an extra 9 tons water per ton pulp or less that a 13% increase in dilution.

The examiner has weighted the difference between a 13% increase in dilution and the knowledge of the person of ordinary skill in the art and has determined that this increase in consistency and dilution would be obvious.

3. Claims 23-26, 32-34, 36, 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 92/03613 HENRICSON in view of Chemical Pulping by GULLICHSEN.

As for claims 23-25, and 32-34, HENRICSON discloses that the pulp is stored in a storage tank and can be sent to a screening stage. HENRICSON fails to disclose any

specific treatment stages prior to being sent to the final screening. In this case HENRICSON is performing a final screening prior to paper making, however the feeding techniques for screening could be used by the person of ordinary skill in the art prior to any screening earlier in the pulp making process. GULLICHSEN discloses both oxygen delignification and washing are stages used for processing pulp. GULLICHSEN discloses that washing can follow after oxygen delignification [pg. A619 Figure 5]. GULLICHSEN teaches a drum displacement washer. It would be obvious to have an oxygen delignification stage in the pulp line of HENRICSON. The person of ordinary skill in the art would be motivated to have an oxygen delignification stage to perform oxygen delignification to delignify the pulp further after cooking to reduce bleaching costs. At the time of the invention it would have been obvious to a person of ordinary skill in the art to have a washer after the oxygen treatment stage of HENRICSON prior to screening. A person of ordinary skill in the art would be motivated to have a washer as taught by GULLICHSEN to remove COD, and used chemicals from the pulp [pg. A637 section 2.1.3]. GULLICHSEN further shows that it is a known combination in the art to have a screen room following a drum displacement washer [pg. A128 Figure 16].

As for claims 26, 29, and 36, HENRICSON discloses a tower but does not disclose a tower with a bottom scraper and dilution [Figure 2]. GULLICHSEN discloses that a tower with a bottom scraper and dilution can be paired with an MC pump [pg. A622 – A623 Figures 14 and 16]. At the time of the invention it would have been *prima facie* obvious to use the tower of GULLICHSEN prior to the MC pump of HENRICSON instead of the tower originally disclosed. A person of ordinary skill in the art would be

motivated to do so to better control the flow of pulp [pg. A622]. The scraper allows for an even discharge of pulp [pg. A622].

As for claims 40 and 42, dilution is not required for the pulp leaving the drum washer of GULLICHSEN as long as the constancy does not rise above 15%. Drum washers typically run at about 10-12% consistency.

4. Claims 22-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent #5,219,472 ELONEN et al., hereinafter ELONEN, in view of Chemical Pulping by GULLICHSEN.

As for claims 22, 30, 31, and 39, ELONEN discloses a method wherein pulp from oxygen treatment is sent [column 1 lines 30-40 and figure 2 (2)] to a degassing medium consistency pump, a degassing MC pump [column 1 lines 59-61], wherein the pulp is degassed.

Examiner recognizes the applicant's argument that ELONEN does not teach an MC pump followed screen and only teaches an AHLSTAR pump which runs at 6-8%. The examiner argues that ELONEN states that a *degassing/deaerating pump* is used preceding the screen plant [column 4 lines 55-58]. ELONEN states that '*throughout the specification'* a deaerating pump' or 'degassing pump' is used to mean a centrifugal pump. ELONEN then states that both MC pumps and AHLSTAR pumps are suitable pumps [column 1 lines 48-68]. A piece of prior art is valid for all embodiments that it teaches.

Alternatively, it would have been obvious to use a MC pump instead of an AHLSTAR pump. If the teaching of ELONEN of a degassing pump before screening

was limited to only an AHLSTAR pump at 6-8% consistency, as alleged by the applicant, it would have still been at least obvious to a person of ordinary skill in the art to substitute a MC pump at 8-15% consistency. A person of ordinary skill in the art would expect that an MC pump could operate at higher consistencies. A person of ordinary skill in the art would further expect that if pulp could be diluted to screening consistency from 6-8% consistency it could also be diluted to screening consistency from 8-15% consistency. It is *prima facie* obvious to substitute one known component for another known component intended for the same purpose with the expectation of success. In the instant case the substitution of an MC pump for an AHLSTAR pump would be expected to degas and pump the pulp.

Wherein the pulp is diluted by water from pump (14) through line 16 [Figure 2] and then screened in screening apparatus (4). Since the pulp is diluted by water subsequent to the MC degassing pump, it has a lower consistency [column 4 lines 50 and 51].

ELONEN does not explicitly disclose the consistency of the pulp in the screening room. GULLICHSEN discloses that a typical screen room is fed at 2% consistency [pg. A128]. At the time of the invention it would have been *prima facie* obvious to run the screen room of ELONEN at the consistency taught by GULLICHSEN which would require dilution by pump 14 to 2% prior to screening. A person of ordinary skill in the art would be motivated to run a well known process such as screening at a typical well known consistency for screening devices.

Finally, GULLICHSEN shows a typical screen room balance [pg. A128 Figure 117]. GULLICHSEN shows that the feed consistency prior to the screen room 12%, the

pulp is then diluted by a subsequent stream. This gives further evidence that it is known to those of ordinary skill in the art to pump stock at medium consistency prior to dilution to a screening consistency.

As for claims 23 and 34, ELONEN discloses oxygen bleaching prior to screening the pulp [column 1 lines 20-35]. The examiner has interpreted oxygen bleaching as oxygen delignification process. After the oxygen treatment the pulp is degassed by a degassing pump prior to screening.

As for claims 24, 25, and 32-33 ELONEN does not disclose washing following the oxygen. GULLICHSEN discloses that washing can follow after oxygen delignification [Figure 40]. GULLICHSEN teaches a drum displacement washer. At the time of the invention it would have been obvious to a person of ordinary skill in the art to have a washer after the oxygen treatment stage of ELONEN prior to screening. A person of ordinary skill in the art would be motivated to have a washer as taught by GULLICHSEN to remove COD, and used chemicals from the pulp [pg. A637 section 2.1.3]. GULLICHSEN further shows that it is a known combination in the art to have a screen room following a drum displacement washer [pg. A128 Figure 16].

As for claims 26 and 29, ELONEN discloses a tower but does not disclose a tower with a bottom scraper and dilution [Figure 2]. GULLICHSEN discloses that a tower with a bottom scraper and dilution can be paired with an MC pump [pg. A622 – A623 Figures 14 and 16]. At the time of the invention it would have been *prima facie* obvious to use the tower of GULLICHSEN prior to the MC pump of ELONEN instead of the tower originally disclosed. A person of ordinary skill in the art would be motivated to do so to

better control the flow of pulp [pg. A622]. The scraper allows for an even discharge of pulp [pg. A622].

As for claims 27, 28, 35, and 36 ELONEN teaches or at least suggests an MC pump. An MC pump performs gas separation using a turbulence forming motor.

As for claim 37, ELONEN does not explicitly disclose how the water is mixed with the pulp. However, it is the examiners position that there are limited options to try from to mix the pulp and a rotary mixing device or a static device as these are the two known types of mixing unit operations in the pulp and paper industry. Alternatively GULLICHSEN teaches rotating based mixers for mixing in fluids after an MC pump [pg. A626-A627]. At the time of the invention it would have been prima facie obvious to use the known medium consistency mixing technology of GULLICHSEN in the water/pulp mixing operation of ELONEN. It is *prima facie* obvious use a known device to improve technique to improve similar devices, absent evidence of unexpected results. In the instant case the required mixing of ELONEN is performed with the known mixer of GULLICHSEN. A person of ordinary skill in the art would expect the pulp solution to be mixed. Alternatively, a person of ordinary skill in the art would be motivated to use the mixer of GULLICHSEN because it provides good homogenization to the pulp suspension [pg. A626].

Additionally, if no special mixer was used in the process of ELONEN and only the liquid pipe was connected to the stock pipe this could be considered a static mixer as the pulp will mix with the added water along the length of the static pipe.

As for claim 38, ELONEN discloses a centrifugal pump for supplying dilution water [Figure 2].

Response to Arguments

Applicant argues that while the examiner's statement that ELONEN states that a degassing pump/deaerating pump is used preceding a screen plant and that ELONEN states that both MC pumps and AHLSTAR pumps is correct that the examiner's conclusion is not correct because the preferred embodiment does not recite an MC pump.

A patent is prior art for all that it teaches and is not limited to preferred embodiments [see e.g. MPEP 2123 (I]).

A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including non preferred embodiments. Merck & Co. v. Biocraft Laboratories, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See also > Upsher-Smith Labs. v. Pamlab, LLC, 412 F.3d 1319, 1323, 75 USPQ2d 1213, 1215 (Fed. Cir. 2005).

In the instant case ELONEN teaches both MC pumps and AHLSTAR pumps (6-8% consistency). An embodiment that is less preferred but taught in a piece of prior art still constitutes prior art [see e.g. MPEP 2123 (II)].

Applicant argues that the person of ordinary skill in the art would preferably choose an AHLSTAR pump instead of an MC pump at the range of 6-8% consistency. Applicant argues therefore the examiners use of an MC pump is hindsight reasoning.

As stated above prior art is not limited to its most preferred embodiment. Additionally, ELONEN states in column 2 line 56 regarding Figure 2 'Deaerating and/or degassing pumps 13 and 14. . .'. ELONEN earlier states in column 1 lines 59-62 'an example of a suitable deaerating pumps are sold as a degassing MC pump'. Therefore it is clear that ELONEN teaches both an embodiment with an MC pump and an embodiment with an AHLSTAR pump. Therefore the substitution of an MC Pump for an AHLSTAR pump is not based on hindsight analysis.

Applicant argues that ELONEN does not disclose pulp consistency. The applicant concludes that since ELONEN discloses using an AHLSTAR pump that the pulp consistency is 6-8%. Therefore the applicant argues that an MC pump would not be used for 6-8% because it is not optimized for said consistencies and the person of ordinary skill in the art would choose the lower cost AHLSTAR pump.

The instant independent claims 22 and 31 do not require an MC pump. This limitation is only claimed in dependent claim 39. The independent claims as written only require medium consistency pulp. The applicant has argued that the pulp is at a consistency of about 6-8%. A consistency of 8% abuts with a consistency of 8-15%. A consistency of 8-15% is known as medium consistency to a person of ordinary skill in the art [see e.g. pg. 123 column 1, SMOOK for substantial evidence thereof]. Therefore at 8% consistency the pulp is medium consistency.

Further, ELONEN teaches both MC pumps and AHLSTAR pumps, see above. The person of ordinary skill in the art would expect that by using an MC pump, pulp could be pumped to a screen room at medium consistency of 8-15%. The person of ordinary skill in the art would also expect the MC pump to degas the pulp as explained in ELONEN.

Finally, ELONEN teaches pulp supplied to the pump is from the oxygen delignification system. Oxygen delignification is known and practiced in the art as a medium consistency process [see e.g. pg. 175-177, SMOOK for substantial evidence thereof; SMOOK also discloses that high consistency was practiced too].

Applicant argues that ELONEN does not teach what the water being fed to the screening system is being used in the screening system.

The examiner agrees that ELONEN does not go into depth about the screening system. Therefore the examiner has combined ELONEN with GULLICHSEN. GULLICHSEN discloses that a typical screen room is fed at 2% consistency [pg. A128]. Therefore it would be obvious that the pulp of ELONEN, whether using an MC pump or an AHLSTAR pump would need to be diluted prior to entering into the first screen stage. GULLICHSEN teaches multiple ways for dilution liquid to be added to pulp including adding dilution right after the MC pump [see e.g. Figure 23 pg. A626], with AHLMIXERS, or even in mixing feed tanks with another pump prior to the screen room [see e.g. pg. A128 Figure 116 shows a mixing tank prior to the screening system].

Applicant states that the method and place of dilution is not taught on pg. 128 and that dilution is only suggested prior to pumping.

The examiner agrees that GULLICHSEN does not teach a method for dilution on pg. 128 Figure 117. However the location of the combination of ELONEN/GULLICHSEN is known. Since ELONEN pumps at a 6-8% consistency in the case of an AHLSTAR pump or an 8 to 15% consistency in a MC pump and screening requires 2% consistency according to GULLICHSEN the location of dilution is known. The location of dilution is known to the person of ordinary skill, in between the (AHLSTAR/MC) pump of ELONEN and screen room of ELONEN to obtain the screening consistency which is obvious via GULLICHSEN.

GULLICHSEN teaches multiple pieces of equipment which are capable of diluting pulp, including AHLMIXERS, direct piped in dilution after the MC pump [see e.g. Figure 23 pg. A626], and in an intermediate tank with a low consistency pump prior to the screening room. A low consistency dilution tank can be in between the screen room and an MC pump and still meet the language of the claims [see e.g. pg. A128 Figure 116 shows a mixing tank prior to the screening system].

The claims state the pulp is pumped *towards* the screen room and the claims use the *comprising* language. Therefore the pulp could be pumped via an MC pump and then to an intermediate low consistency tank and still meet the claim language. This is because the claims can comprise an intermediate tank in between screening and the pump.

Applicant gives typical amounts for a decrease in consistency via an AHLMIX and via seal water dilution. The applicant argues that these would only decrease consistency by less than 0.5% and 0.1% in the case of seal water dilution.

Instant claims 22 and 30 only state that the pulp is diluted to screening consistency. The applicant only claims low consistency in instant claim 30. Therefore any amount of dilution could be possible and would anticipate the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. CALANDRA whose telephone number is (571) 270-5124. The examiner can normally be reached on Monday through Thursday, 7:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Anthony J Calandra/
Examiner, Art Unit 1791

/Eric Hug/
Primary Examiner, Art Unit 1791